Opener Question 3M

J) A function is described using the following information

$\{x \in R \mid 2 \leq x \leq 20\}$

i) State in words what this means

ii) Is this the function's domain or range

H

x	y
1	2
2	4
3	4
4	5

Is this a function? Why?

Feb 5-8:42 AM

Opener Question 3M

J) A function is described using the following information

$\{x \in R \mid 2 \leq x \leq 20\}$

x is a set of real numbers such that x is greater or equal to 2 but less than or equal to 20

i) State in words what this means

ii) Is this the function's domain or range?

H

x	y
1	2
2	3
3	4
4	5

Is this a function? Why?

$R = \{y \in R \mid y = 4\}$

Feb 5-8:42 AM

1.2 Comparing Rates of Change

Linear vs Quadratic p 17

Linear-first differences are the same

Quadratic-second differences are the same

Linear

x	y	Δy ($y_2 - y_1$)
0	0	
1	2	+2
2	4	+2
3	6	+2
4	8	+2
5	10	+2

$Ax + By + C = 0$

Degree 1

Quadratic

x	y	Δy	Δy^2
0	0	1	
1	1	3	2
2	4	5	2
3	9	7	2
4	16		

$y = ax^2 + bx + c$

Degree 2

Function Notation

State the Dependent Variable in terms of the Independent Variable

i.e $y = 3x$ $f(x) = 3x$

Feb 5-1:52 PM

EXAMPLE 2 Representing volume as a function of time

Water is poured into a tank at a constant rate. The volume of water in the tank is measured every minute until the tank is full. The measurements are recorded in the table.

Time (min)	0	1	2	3	4	5	6	7
Volume (L)	0.0	1.3	2.6	3.9	5.2	6.5	7.8	9.1

a) Use difference tables to determine whether the volume of water poured into the tank, $V(t)$, is a linear or quadratic function of time. Explain.

b) State the domain and range using set notation.

p 21

p. 21

x	y	Δy
0	0	
1	1.3	1.3
2	2.6	1.3
3	3.9	1.3
4	5.2	1.3
5	6.5	1.3
6	7.8	1.3
7	9.1	1.3

Linear Function

Degree = 1

First Differences the Same (1.3)

$V(t) = 1.3t$

Example #2 p 21

$y = 1.3x$

$V(t) = 1.3t$

Volume = V

time (min) = t

(t) dep ind

$D = \{t \in R \mid 0 \leq t \leq 7\}$

$R = \{V(t) \in R \mid 0 \leq V(t) \leq 9.1\}$

Sep 6-1:44 PM

State the Degree

$y = 3x(x+1)$

$y = 3x^2 + 3x$ Degree = 2

$3x^4 + 2x^2 + 3$ Degree = 4

-when in standard from the degree is determined by the highest value above the independent variable

Feb 10-10:10 AM

Hmk P. 24-25 q1, 2,4,6,7 & 8

Feb 5-2:07 PM

		Δy^1	Δy^2
0	10		
		-0.16	
0.1	9.84		-0.32
		-0.48	
0.2	9.36		-0.32
		-0.80	
0.3	8.56		-0.32
		-1.12	
0.4	7.44		
		-1.44	-0.32
0.5	6.00		

Feb 10-10:10 AM

Degree — Quad or Lin

6 a) $f(x) = -4x(x-1) - x$

$f(x) = -4x^2 + 4x - x$

$f(x) = -4x^2 + 3x$

Degree = 2

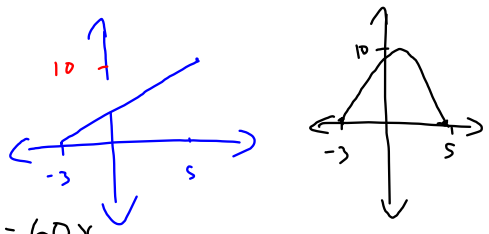
∴ quadratic

Review Ones –

p37 q1-5

p70 q1-3

Feb 5-2:15 PM



$f(x) = 60x$

$f(30) = 60(30)$

$f(30) = 1800$

60 sl 3600

$D = \{x \in W \mid 0 \le x \le 60\}$

$R = \{f(x) \in W \mid 0 \le f(x) \le 3600\}$

Feb 5-2:33 PM

8) a) $h(t) = 29.4t - 4.9t^2$

b) Degree 2 Quadratic

c)

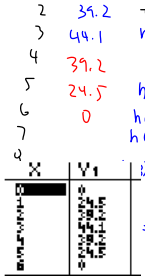
t	h(t)
0	0
1	24.5
2	39.2
3	44.1
4	39.2
5	24.5
6	0
7	
8	

Sub t=0: $h(0) = 29.4(0) - 4.9(0)^2$, $h(0) = 0$

t=1: $h(1) = 29.4(1) - 4.9(1)^2$, $= 29.4 - 4.9$, $= 24.5$

$h(2) = 29.4(2) - 4.9(2)^2$, $h(2) = 58.8 - 19.6$, $h(2) = 39.2$

$h(3) = 29.4(3) - 4.9(3)^2$, $= 88.2 - 4.9(9)$, $= 88.2 - 44.1$, $= 44.1$



$D = \{t \in R \mid 0 \le t \le 6\}$

$R = \{h(t) \in R \mid 0 \le h(t) \le 44.1\}$

Sep 5-10:18 AM

Sep 5-10:31 AM